A NEW SPECIES OF *MICROTHRISSA* IN WEST AFRICAN FRESHWATERS (PISCES : CLUPEIDAE)

by

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ABSTRACT. – A new clupeid freshwater fish from Ghana is described as *Microthrissa normani* sp. nov., thus extending the range of this genus westward from the Zaire system ; it is clearly separated from its congeners by the absence of prepectoral scutes and more gillrakers (20-24, *versus* 14-21).

RÉSUMÉ. – L'auteur décrit un nouveau poisson Clupeidae des eaux douces du Ghana, *Microthrissa normani* sp. nov., ce qui étend la distribution géographique du genre vers l'ouest, en partant du bassin du Zaire ; cette espèce se distingue nettement des autres *Microthrissa* par l'absence d'écailles en écusson en avant des nageoires pectorales et par un nombre plus élevé de branchiospines (20-24 contre 14-21).

Keywords : Pisces, Clupeidae, *Microthrissa normani*, new species, Ghana.

The clupeoid or herring-like fishes (65 genera and about 213 species if the now separated Pristigasteridae are included) are mostly marine, but with some or all members of certain subfamilies anadromous or completely freshwater (Whitehead, 1986). The largest assemblage of strictly freshwater clupeids is the Pellonulinae of African rivers and lakes, with about 26 species of 13 genera ; the exact systematic limits of this subfamily are not yet clear (Grande, 1985) and for the moment another 14 species of 10 genera, both marine and freshwater, from the Indo-West Pacific area are also included (Wongratana, 1980).

The African pellonuline species and genera were reviewed by Poll (1974) and more recently by Whitehead (1986), and a bibliographic synopsis was made by Poll, Teugels & Whitehead (1984) ; in this last work, the species *Congothrissa gossei* Poll, 1964, was placed in a separate family, the Congothrissidae, by Poll & Teugels (1984 : 56) following Taverne (1977). Most of the genera can be fairly easily defined, largely on the basis of jaw characters and development of ventral scutes, but species problems exist in such genera as *Pellonula* and *Cynothrissa*, partly through lack of material.

The genus *Microthrissa* Boulenger, 1902, belongs to the group of African pellonuline genera that have a rather slender maxilla blade (its depth 3 or more times in

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its length), a ridge along the top of the maxilla shaf that is more or less flared outward, and a (2nd) supra-maxilla that departs from the usual clupeid paddle-shape and tends to be more spatulate (often with a reduction in the length of the shaft or even its virtual disappearance). To this group belong *Microthrissa, Poecilothrissa, Stolothrissa* and *Limnothrissa.* In the genera *Pellonula, Cynothrissa, Odaxothrissa* and *Nannothrissa* the maxilla blade is deeper, its shaft without a distinct flange, the supra-maxilla blade is paddle-shaped and its shaft always long. These differences are shown in figure 1.

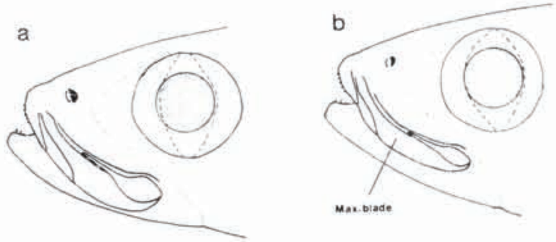

Fig. 1. – *Pellonula* (a) and *Microthrissa* (b), showing the more slender maxilla in the latter.

Poll (1974) correctly allied *Microthrissa* with *Poecilothrissa* and *Potamothrissa,* distinguishing the latter chiefly by its very short shaft to the premaxilla ; he separated *Microthrissa* from *Poecilothrissa* merely by its larger scales (27-34 in lateral series, *versus* 36-40). Un fact, *Potamothrissa* differs from all other African pellonulines (but resembles the Indo-West Pacific genus *Clupeichthys*) in having a dentary that does not rise steeply in the mouth and also in possessing teeth not only at the symphysis, but along the sides of the jaw (Poll, 1974 : fig. 3 illustrates this, but without comment; see also Whitehead, 1986 : 154).

Microthrissa has hitherto included only two species, *M. royauxi* Boulenger, 1902, and *M. minuta* Poll, 1974, both from the Zaire river system (Poll, 1974 : map 2). The distribution of *Microthrissa* is now extended by specimens collected by Dr Tyson Roberts from the Birrim river in Ghana. These cannot be identified with the two known species and are described here as new. Poll, Teugels & Whitehead (1984: 47) listed '*Microthrissa* sp.' of Daget (1962 : 59) from the Kolente river in Guinea, but with reservations because at that time Daget was using the name *Microthrissa* for species of *Pellonula* (e.g. *Microthrissa miri* Daget, 1965 = *P. afzeliusi*). In fact, Daget's Kolente specimen (MNHN 1961-0032) appears to be yet another species of *Microthrissa,* but it is a juvenile of 31.3 mm SL and its identity must await discovery of adults.

The measurements given here follow those in Whitehead (1986). Institutional abbreviations are : BMNH - British Museum (Natural History), London ; MNHN - Muséum national d'Histoire naturelle, Paris ; SU - Stanford University collections at California Academy of Sciences, San Francisco.

Microthrissa Boulenger, 1902

African freshwater pellonuline fishes with a complete or almost complete series of ventral scutes (9-14 prepelvic), a distinct flange along the top of the maxilla shaft, the maxilla blade slender (depth 3 or more in length) and not more than twice the length of the maxilla shaft, a rather spatulate 2nd supra-maxilla blade, the lower jaw rising steeply within the mouth and not lined with teeth along its edge, jaw teeth small and in a single series, gillrakers 14-24 on lower part or arch, and scales large (up to about 35 in lateral series).

Three species of *Microthrissa* are now known, separated by the following key :

1. Scutes present before pectoral fin base ; lower gillrakers 14-21 ; prepelvic scutes 11-14 ; Zaire system
   A. Lower gillrakers 14-16 ; total anal finrays 23-27 ; prepelvic scutes 13-14 .... *M. royauxi* Boulenger, 1902
   B. Lower gillrakers 19-21 ; total anal finrays 18-21 ; prepelvic scutes 11-12 ; .... *M. minuta* Poll, 1974
2. No scutes before pectoral fin base ; lower gillrakers 20-24 (usually 23) ; prepelvic scutes 9-11 (usually 10) ; total anal finrays 18-23 ; Ghana .... *M. normani* sp. nov.

Microthrissa normani sp. nov.

(Figs 2, 3)

Microthrissa Species A. Whitehead, 1986, *FAO Species Catalogue, 7, Clupeoid fishes of the world* : 154 (description, illustration).

Holotype : a fish 72 mm SL, *ex* Birrim river (tributary of Pra river) near Kade (5°8'N, 0°51'W), Ghana, collected by Dr Tyson Roberts. BMNH 1986.1.1.1.

Paratypes : 19 fishes, 51-61 mm SL (data as for holotype), BMNH 1986.1.1.2.11, MNHN 1986-449 and SU 64818.

Other specimens : 6 fishes, 52-53 mm SL (data as for holotype), SU 64818.

Diagnosis : a species of *Microthrissa* immediately distinguished by the absence of prepectoral scutes and by its high gillraker count (usually 22 or 23 on the lower part of the arch). Other diagnostic characters in key.

Description : based on the holotype and the 19 paratypes (51-72 mm SL).

Br. St. (5) 6 ; D iii (iv) 11-13 (usually 12); P i 10-12 (usually 11 or 12); V i 7 (i 6 on left side in one fish); A ii-iii 16-17 (18,20) (total 18-23) ; scutes 9-11 (usually 10) + 8-10 (usually 8 or 9) = 17-20 (usually 18 or 19), g.r. (20) 22-24 (usually 22 or 23).

Body moderately deep (depth about 1/3 of SL), compressed, head a little shorter than body depth. Belly keeled, prepelvic scutes beginning below or behind

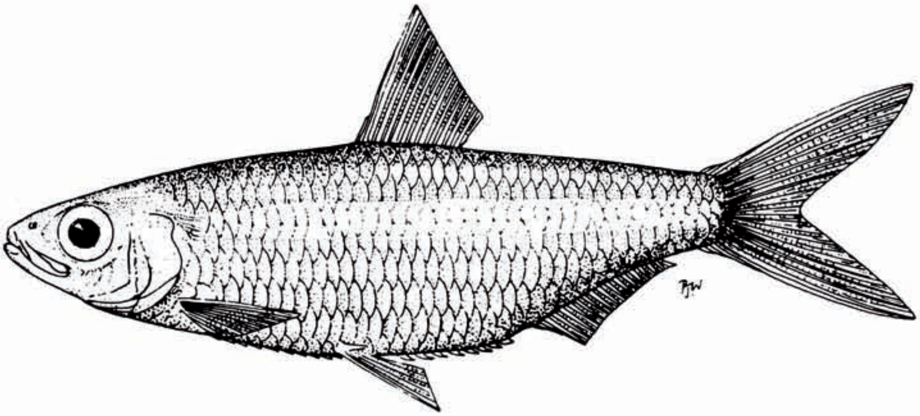

Fig. 2. – *Microthrissa normani*, holotype, 72 mm SL.

base of final pectoral finray, with a distinct but low keel (the first scute as counted here sometimes preceded by a small scale-like and unkeeled plate); postpelvic scutes with sharp, spine-like keels. Eye greater than snout length ; thin adipose tissue leaving a vertical slit slightly less than pupil diameter. Upper jaw reaching back to or just beyond vertical from front pupil margin ; premaxillae with about a dozen small conical teeth in a single series on each side ; 3-4 larger conical teeth on each side of vomer ; maxilla blade about 3 times as long as deep, lower edge without denticulations, upper edge where it becomes the anterior shaft bearing a distinct flange that curves outward to meet the lower edge of the 1st suborbital bone (lacrymal); a single (2nd or posterior) supramaxilla, its blade somewhat spatulate, lower part larger than the upper, its anterior shaft about as long as the blade. Lower jaw with sharp conical teeth at symphysis, directed backward; jaw ring steeply within mouth, its lateral edges not toothed, jaw articulation below about centre of eye.

Posterior frontal fontanelles retained in adults (a little over 1/2 eye diameter in holotype). Operculum with rounded indentation at hind margin at about the point where the cephalic lateralis canal forms a final series of branches on the flank. Gillrakers fine and slender, about 3/4 length of corresponding gill filaments. Pseudo-

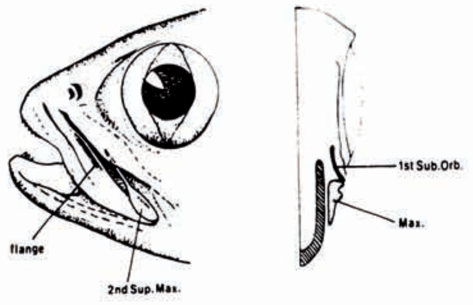

Fig. 3. – *Microthrissa normani*, lateral view and cross-section of head to show flange on upper edge of maxilla (Max.), its relation to the 1st sub-orbital bone (1st Sub. Orb.), also the rather spatulate supra-maxilla (2nd Sup. Max.).

branch present, exposed, a little over 1/2 eye diameter in length, with about twenty filaments.

Dorsal fin beginning a little before midpoint of body ; pectoral fins failing to reach pelvic fin base by 3/4 to 1 eye diameter, without a single triangular axillary scale ; pelvic fin base a little before vertical from dorsal fin origin (by about 1/2 eye diameter), about equidistant between pectoral fin base and anal fin origin (or nearer to the latter), with a triangular axillary scale about 1/2 length of fin ; anal fin origin behind vertical from base of last dorsal finray (by about 1/2 eye diameter).

Scales oblong, up to twice as deep as wide, hind border with a rounded bulge in midline ; a single continuous vertical striation and occasionally some incomplete striae before this ; scales mostly lost but about 35 in lateral series in one fish and about 10 rows of scales at deepest part of body ; a median series of predorsal as well as postdorsal scales.

Colour : in alcohol, brown with an indication of what presumably was a midlateral silver stripe, broadest after dorsal fin base (about 3/4 eye diameter).

Etymology : named for D.M. Norman, in gratitude.

Table I.– *Microthrissa normani* : body proportions in the holotype and in nineteen paratypes (percentage of standard length, SL).

		All types	
	Holotype	Range	Mean
Standard length (mm)	72	51 - 72	
Body depth	31.9	28.0 - 31.9	29.87
Head length	24.7	23.4 - 27.1	25.45
Snout length	6.0	5.6 - 7.3	6.6
Eye diameter	8.8	8.3 - 9.6	9.09
Upper jaw	10.4	8.7 - 11.5	9.95
Lower jaw	13.3	12.9 - 14.0	13.5
Predorsal distance	53.1	51.5 - 54.9	52.84
Prepelvic distance	50.7	48.5 - 51.6	50.45
Preanal distance	72.5	70.9 - 74.5	73.18
Dorsal fin height	21.0	18.2 - 21.0	19.64
Pectoral fin length	18.8	17.0 - 20.6	18.77
Pelvic fin length	14.6	15.0 - 16.5	15.54
Anal fin base	18.3	18.3 - 23.3	20.82

Relationships

Microthrissa normani is certainly quite distinct from its two Zaire congeners, but it would be unwise to speculate on its relationships before adults of Daget's Kolente (Guinea) fish have been found ; his juvenile also lacks prepectoral scutes, but its low gillraker count (14) may mean that scutes as well as gillrakers had not yet achieved the adult number. As shown by Poll (1974) and Whitehead (1986), a number of pellonuline species and genera seem to be confined to the Zaire system and waterbodies to the east (Lake Moeru, Lake Tanganyika). Until now, only *Pellonula* and *Cynothrissa* (and perhaps marginally *Laeviscutella*) have been found in the Zaire system and also in the rivers of West Africa. More intensive collecting in the rivers of Cameroun and the upper reaches of the Niger and Benue may shift the apparent zoogeographical break further to the west. The discovery of *Microthrissa normani* suggests this. The African Pellonulinae are presently being revised (Teugels & Whitehead, in prep.).

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